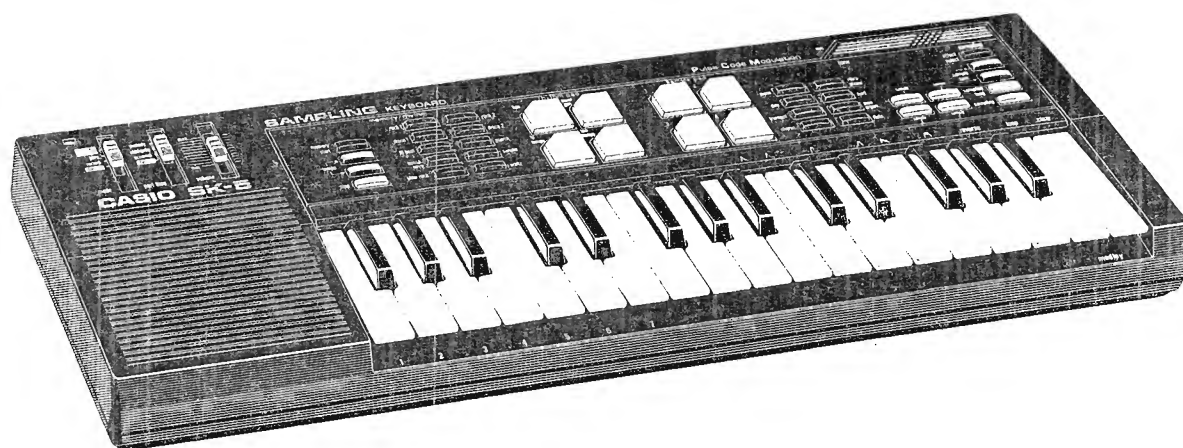# SERVICE MANUAL & PARTS LIST

(without price)

ELECTRONIC KEYBOARD

SK-5

MAR. 1987
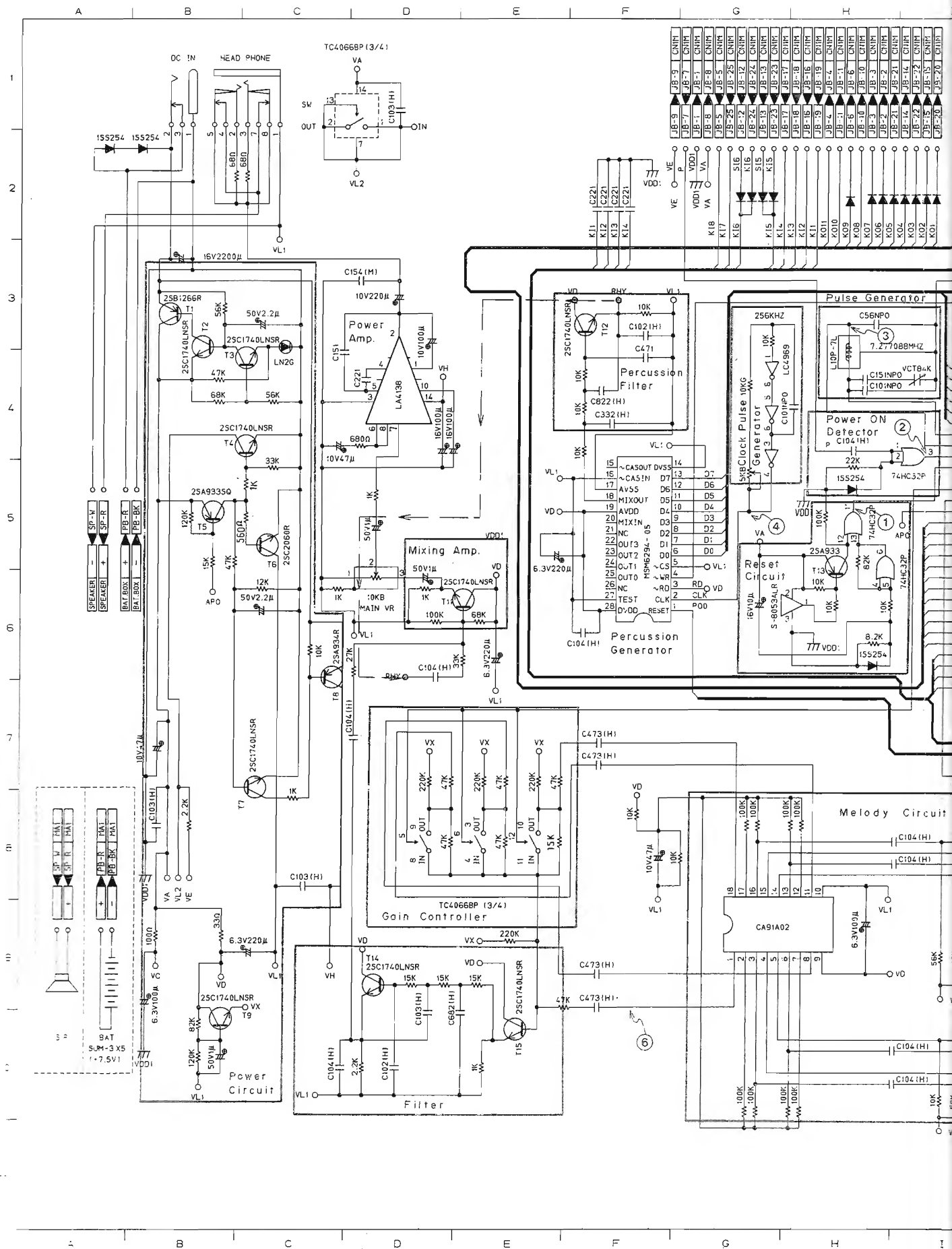
SK-5
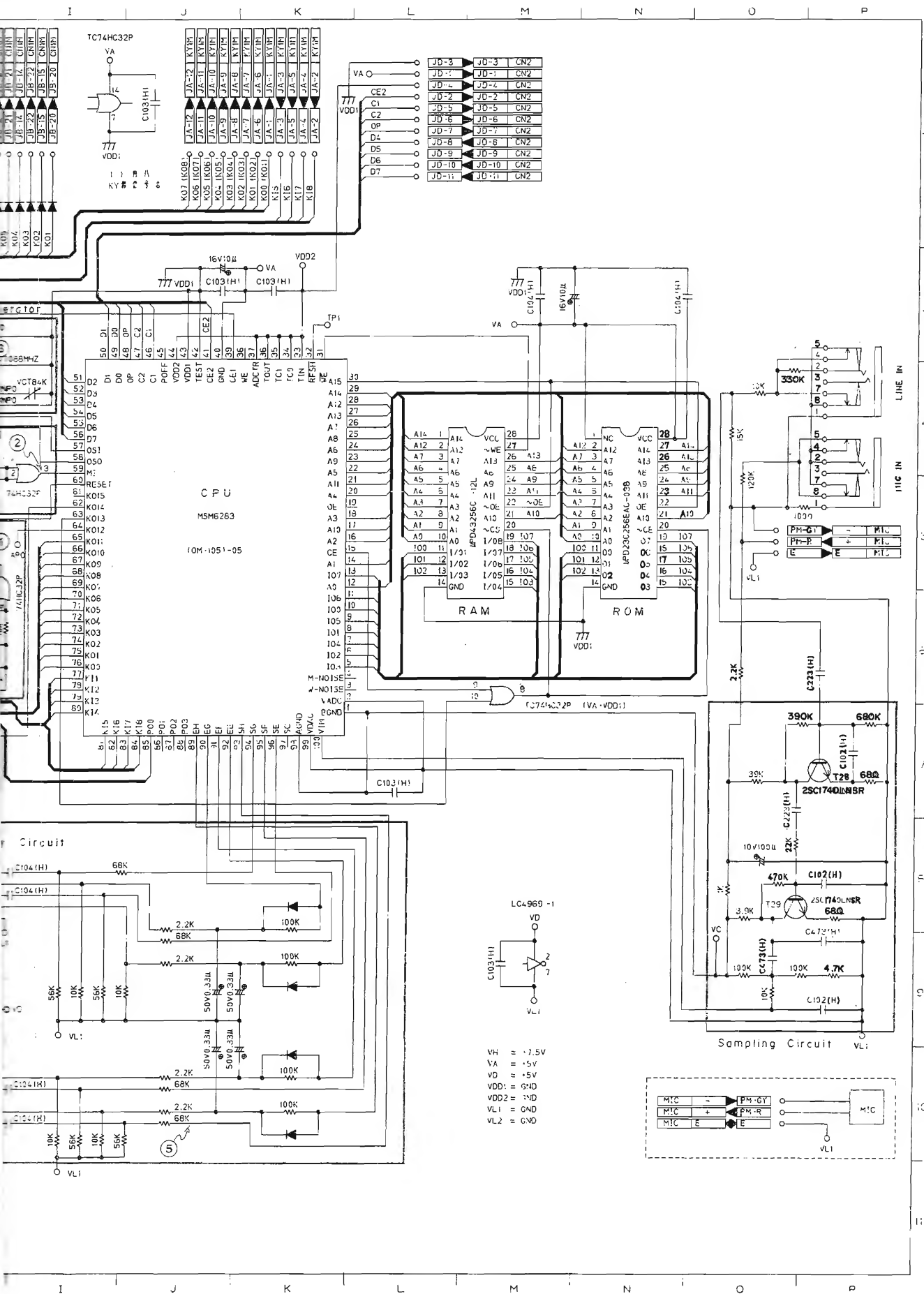
CASIO®

CONTENTS

1. SCHEMATIC DIAGRAM

1-1. PCB M3126-MA1M

Sampling Circuit

VH = +7.5V
VA = +5V
VD = +5V
VDD1 = GND
VDD2 = GND
VL1 = GND
VL2 = GND

CPU
MSM6263
IOM-1051-05

RAM

ROM

LC4969-1

TC74HC32P

1-2. PCB M3126-CN1M

POWER OFF

KI8

PLAY   KI1

REC   KI2

MELODY   KI4

AUTO PLAY   KI3

OBBLI GATO   KI3

MELODY GUIDE   KI4

ACCOMP   KI2

NORMAL   KI4

ARABIC   KI3

SET   KI1

SET b   KI2

Rock 1   KI1

Disco 1   KI3

16 Beat   KI1

Bossa Nova   KI3

Slow Rock   KI1

Rock 2   KI2

Disco 2   KI4

March   KI2

Samba   KI4

Waitz   KI2

MEMORY START   KI2

TEMPO ▲   SI6

TEMPO ▼   SI5

MEMORY STOP   KI1

K09   K011   K010   K06   K07   K08   K010

MAIM MAIM MAIM MAIM MAIM MAIM MAIM MAIM MAIM MAIM MAIM MAIM MAIM MAIM MAIM MAIM MAIM MAIM MAIM MAIM MAIM MAIM MAIM MAIM MAIM

JB-5 JB-25 JB-24 JB-23 JB-9 JB-7 JB-1 JB-8 JB-12 JB-13 JB-17 JB-18 JB-16 JB-19 JB-11 JB-6 JB-10 JB-3 JB-2 JB-21 JB-14 JB-22 JB-15 JB-20 JB-4

JB-5 JB-25 JB-24 JB-23 JB-9 JB-7 JB-1 JB-8 JB-12 JB-13 JB-17 JB-18 JB-16 JB-19 JB-11 JB-6 JB-10 JB-3 JB-2 JB-21 JB-14 JB-22 JB-15 JB-20 JB-4

VE P VDD1 VA

KI8 KI7 KI6 KI5 S16 S15 KI4 KI3 KI2 KI1 KO10 KO9 KO8 KO7 KO6 KO5 KO4 KO3 KO2 KO1 KO11

KI7 KI5 KI8 KI6

START

KI1 Piano
KI3 Dog
KI1 Trumpet
KI3 Chorus

KI2 Vibraphone
KI4 Surf
KI2 Pipe Organ
KI4 Flute

KI1 SAMPLE1
KI2 SAMPLE2
KI3 SAMPLE3
KI4 SAMPLE4

PAD1
PAD3

PAD2
PAD4

KI4 EDIT
KI8 TUNE ▲
KI7 TUNE ▼
KI2 SAMPLE LONG
KI1 SAMPLE NORMAL

▲ ▼ STOP

KO10 KO4 KO1 KO2 KO3 KO8 KO5 KO10

	A	B	C	D

MA1M	JD-1	JD-1
MA1M	JD-2	JD-2
MA1M	JD-3	JD-3
MA1M	JD-4	JD-4
MA1M	JD-5	JD-5
MA1M	JD-6	JD-6
MA1M	JD-7	JD-7
MA1M	JD-8	JD-8
MA1M	JD-9	JD-9
MA1M	JD-10	JD-10
MA1M	JD-11	JD-11

C103F

GND	1
CE1	2
VDD1	3
VDD2	4
ϕ_1	5
ϕ_2	6
CP	7
D1	8
D2	9
D3	10
D4	11

MSM-5268

44 43 42 41 40 39 38 37 36 35 34

1
2
3
4
5
6
7
8
9
10
11

33
32
31
30
29
28
27
26
25
24
23

12 13 14 15 16 17 18 19 20 21 22

A   B   C   D

1

JA-12 MA1M
JA-11 MA1M
JA-10 MA1M
JA-9 MA1M
JA-8 MA1M
JA-7 MA1M
JA-6 MA1M
JA-1 MA1M
JA-3 MA1M
JA-5 MA1M
JA-4 MA1M

JA-12
JA-11
JA-10
JA-9
JA-8
JA-7
JA-6
JA-1
JA-3
JA-5
JA-4

2

K08
K07
K06
K05
K04
K03
K02
K01
K15
K16
K17

3

F1
F1#
G1
G1#
A1
A1#
B1
C2
C2#
D2
D2#
E2
F2
F2#
G2
G2#

4

K08
K07
K06
K05
K04
K03
K02
K01

5

6

A   B   C   D

— 4 —

2. PCB VIEW & MAJOR CHECKPOINTS
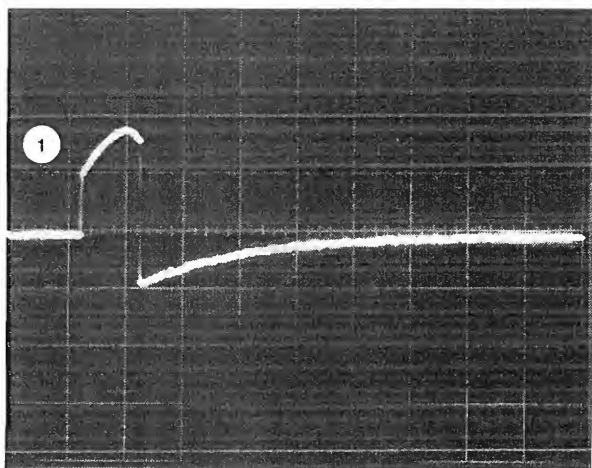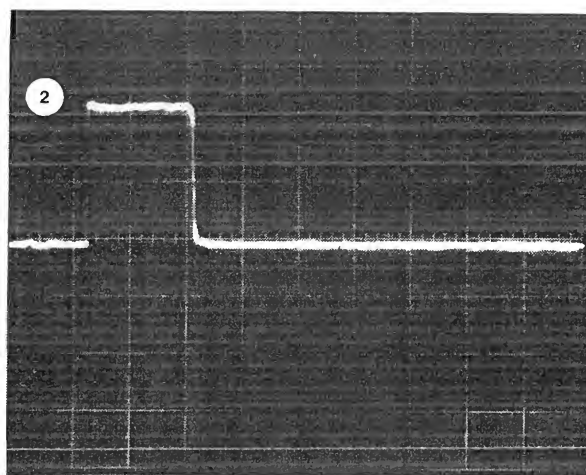
3. MAJOR WAVEFORMS

Notes: Photographs of waveforms have been taken using a memory scope.
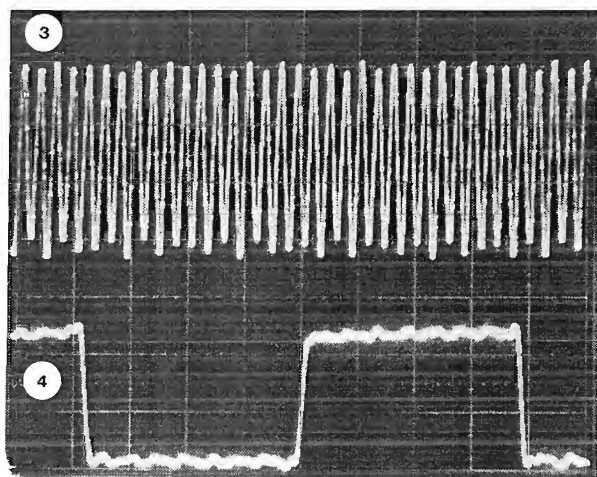Attenuation Radio of probes 10:1

(1) RESET signal
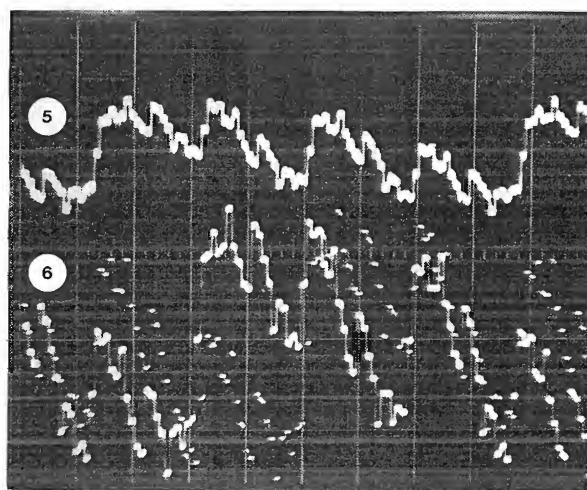When AC adaptor is inserted
0.2V/div., 0.1 sec/div.

(2) Signal MI
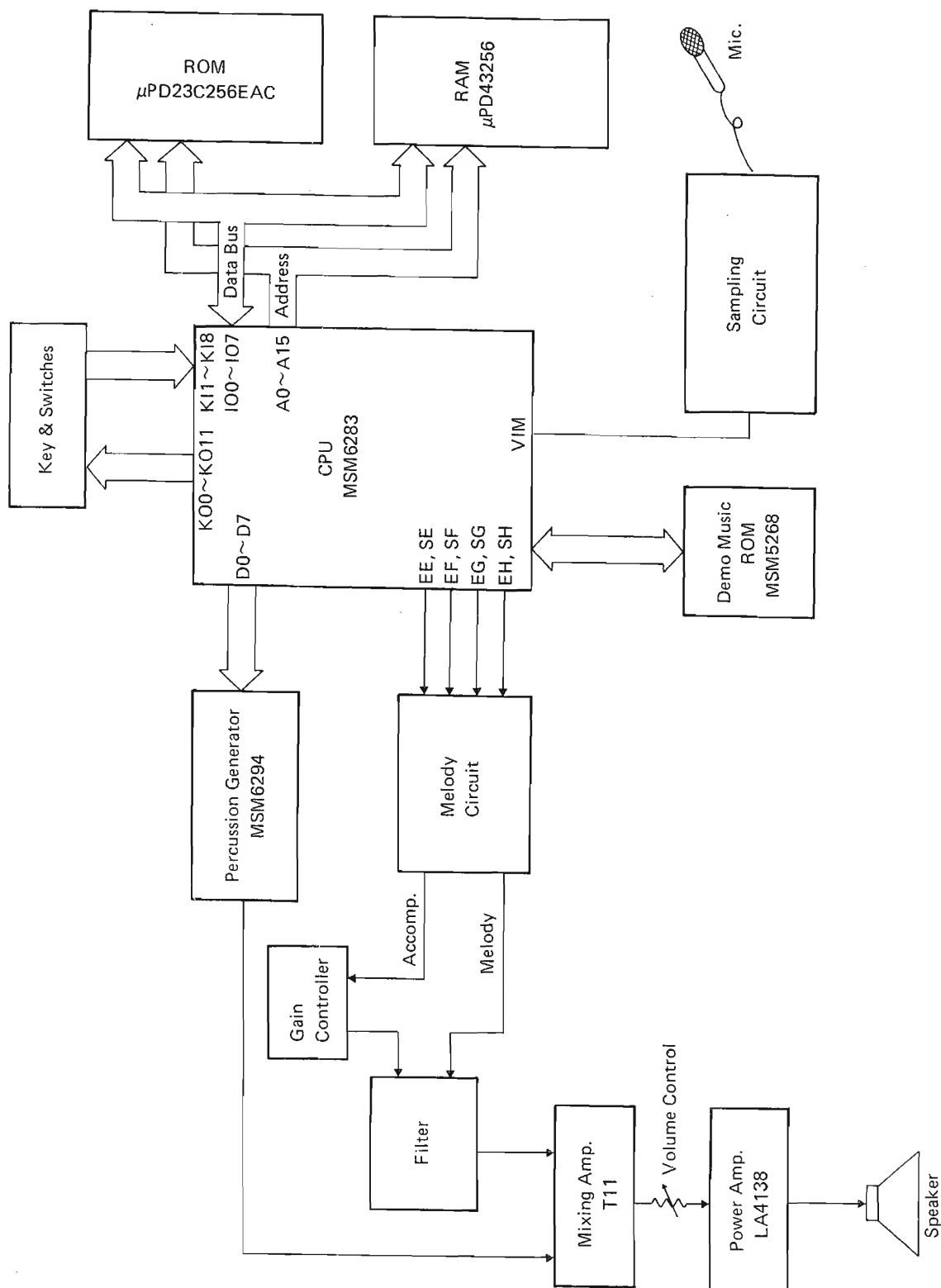At Power ON
0.2V/div , 1ms/div

(3) CPU clock

(4) Percussion Generator Clock
0.2V/div., 0.5µs

(5) Signal SH

(6) Melody Circuit Output
Tone: Pipe Organ
Key: C2
50mV/div., 1ms/div.

4. BLOCK DIAGRAM

```
                                                                    Mic.

  ┌──────────────┐  ┌──────────────┐
  │     ROM      │  │     RAM      │      ┌──────────────┐
  │ μPD23C256EAC │  │  μPD43256    │      │   Sampling   │
  │              │  │              │      │   Circuit    │
  └──────┬───────┘  └──────┬───────┘      │              │
         ▲  ▲              ▲  ▲           └──────┬───────┘
         │  │  Data Bus    │  │                  │
         │  │  Address     │  │                  │
  ┌──────┴──┴──────────────┴──┴────────┐         │
  │  K00~KO11 KI1~KI8  A0~A15           │         │
  │  I00~IO7                     VIM────┼─────────┘
  │                                     │
  │            CPU                      │        ┌──────────────┐
  │          MSM6283                    │◄──────►│  Demo Music  │
  │                                     │        │     ROM      │
  │  D0~D7    EE,SE EF,SF EG,SG EH,SH   │        │   MSM5268    │
  └────┬──────┬─────┬─────┬─────┬───────┘        └──────────────┘
       │      │     │     │     │
  ┌────▼────┐ │ ┌───▼─────▼─────▼──┐
  │Percussion│ │ │     Melody       │
  │Generator │ │ │     Circuit      │
  │ MSM6294  │ │ │                  │
  └────┬─────┘ │ └──┬───────────┬───┘
       │       │    │ Accomp.   │ Melody
       │   ┌───▼────┴┐          │
       │   │  Gain    │         │
       │   │Controller│         │
       │   └────┬─────┘         │
       │        │   ┌───────────┘
       │   ┌────▼───▼─┐
       │   │  Filter  │      ┌──────────┐  Volume Control  ┌──────────┐
       │   │          │─────►│ Mixing   │──────/\/\──────►│ Power    │──► Speaker
       │   └──────────┘      │ Amp. T11 │                  │Amp.LA4138│
       └────────────────────►│          │                  └──────────┘
                             └──────────┘
```

Key & Switches

─ 7 ─

5. KEY & SWITCH MATRIX

	KI1	KI2	KI3	KI4	KI5	KI6	KI7	KI8
KO0					F1	F#1	G1	G#1
KO1	Piano	Vibra-phone	Dog	Surf	A1	A#1	B1	C2
KO2	Trumpet	Pipe Organ	Chorus	Flute	C#2	D2	D#2	E2
KO3	Sample 1	Sample 2	Sample 3	Sample 4	F2	F#2	G2	G#2
KO4	Memory Stop	Memory Start		Edit	A2	A#2	B2	C3
KO5	Sample Normal	Sample Long			C#3	D3	D#3	E3
KO6	Rock 1	Rock 2	Disco 1	Disco 2	F3	F#3	G3	G#3
KO7	16 Beat	March	Bossa Nova	Samba	A3	A#3	B3	C4
KO8	Slow Rock	Waltz			Sample Pad 1	Sample Pad 2	Sample Pad 3	Sample Pad 4
KO9	Play	Record	Demo					Power Off
KO10					Tempo ▼	Tempo ▲	Tune ▼	Tune ▲
KO11		Accomp.	Obbligato	Melody	Rhythm Pad			
					Hi-Bongo	Low Bongo	Lion	Dog

6. CPU (MSM6283-05GS)

○ Generates Pitch and Envelope signals for Melody, Chord, Bass and Obbligato sounds.

○ Controls Keys, Switches and peripheral devices.

The following table is the pin functions of the CPU.

Pin No.	Terminal Name	In/Out	Function
1	BGND		5V source for internal ADC (Analog to Digital Converter)
2	VADC		Ground (0V) source for internal ADC
3, 4			No function
5 ~ 11	IO0~IO6	In/Out	Data bus (D0 ~ D6)
12	A0	Out	Address bus (A0)
13	IO7	In/Out	Data bus (D7)
14	A1	Out	Address bus (A1)
15	$\overline{CE}$	Out	Chip enable signal for memory devices. LOW active.
16~18	A2, A10, A3	Out	Address bus (A2, A3, A10)
19			No function
20~29	A4~9, A11~14	Out	Address bus (A4 ~ A9, A11 ~ A14)
30	A15	Out	Output enable signal for memory devices. LOW active.
31	$\overline{WE}$	Out	Write enable signal for RAM. LOW active.
32~38			No function
39	CE1	Out	Write enable signal for Percussion generator. LOW active.
40	GND		5V source
41	CE2	Out	ROM pack's chip select signal. LOW active.
42			No function
43	VDD1		Ground (0V) source for internal digital circuit
44	VDD2		Ground (0V) source for internal analog circuit
45			No function
46, 47	CP1, CP2	Out	ROM pack's clock pulse
48	OP	Out	Demo Music ROM's data/address change signal. Data bus for Demo Music ROM becomes data or address in accordance with the voltage level of this signal.
49~52	D0 ~ D3	Out	Data bus for Percussion generator.
53~56	D4 ~ D7	Out	Data bus for Percussion generator and data/address bus for Demo Music ROM.
57, 58	OSI, OSO	In/Out	7.277 MHz clock pulse input and output.
59	MI	In	Power ON detection signal input. HIGH active. Receiving a pulse at Power ON, CPU starts functioning.
60	RESET	In	Reset signal input. HIGH active. The terminal receives a pulse which resets CPU internal circuit when new batteries or AC adaptor is set.
61			No function
62	KO14	Out	Accompaniments' volume control signal.
63	KO13	Out	ROM and RAM chip select signal.

Pin No.	Terminal Name	In/Out	Function
64	KO12	Out	APO (Auto Power Off) signal output. Terminal drops to LOW level to shut the voltages off when the unit is not operated for approximately 6 minutes.
65~76	KO11~KO0	Out	Key common signals.
77~84	KI1 ~ KI8	In	Key input signals
85	PO0	Out	Reset signal for Percussion generator. The terminal holds LOW level at power ON for a while during which the internal circuits of the Percussion generator are initialized.
86~88	PO1 ~ PO3		No function
89	EH	Out	Melody envelope signal output
90	EG	Out	Melody or obbligato envelope signal output
91	EF	Out	Melody or chord envelope signal output
92	EE	Out	Melody or bass envelope signal output
93	SH	Out	Melody pitch signal output
94	SG	Out	Melody or obbligato pitch signal
95	SF	Out	Melody or chord pitch signal
96	SE	Out	Melody or bass pitch signal
97			No function
98	AGND		+5V source for DAC (Digital to Analog Converter)
99	VDAC		Ground (0V) source for DAC
100	Vin	In	Sampling sound input signal from MIC terminal
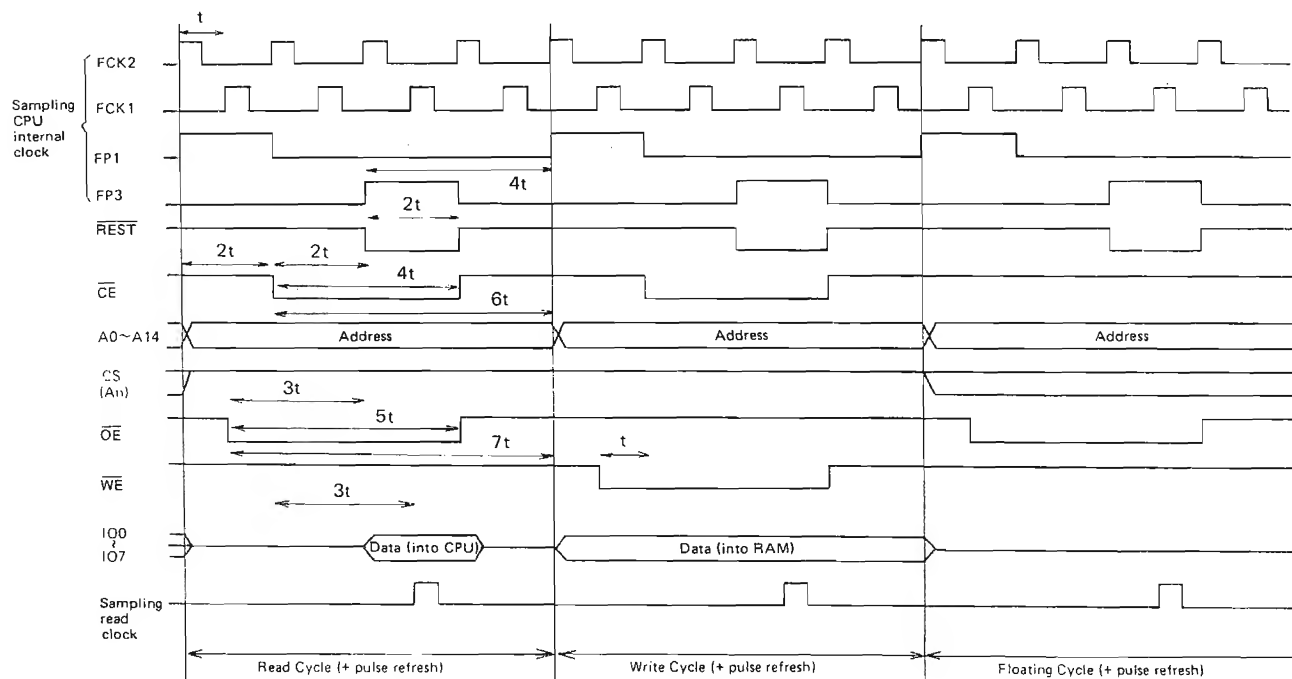
t = 1/fPG (≈7,802MHz)

Timing chart of sampling CPU for ROM and RAM

## 7. PERCUSSION GENERATOR (MSM6294-02)

Containing a internal ROM (128 Kbit) for percussion data, and internal 8 bit DAC (Digital to Analog Converter), the LSI provides percussion sounds.
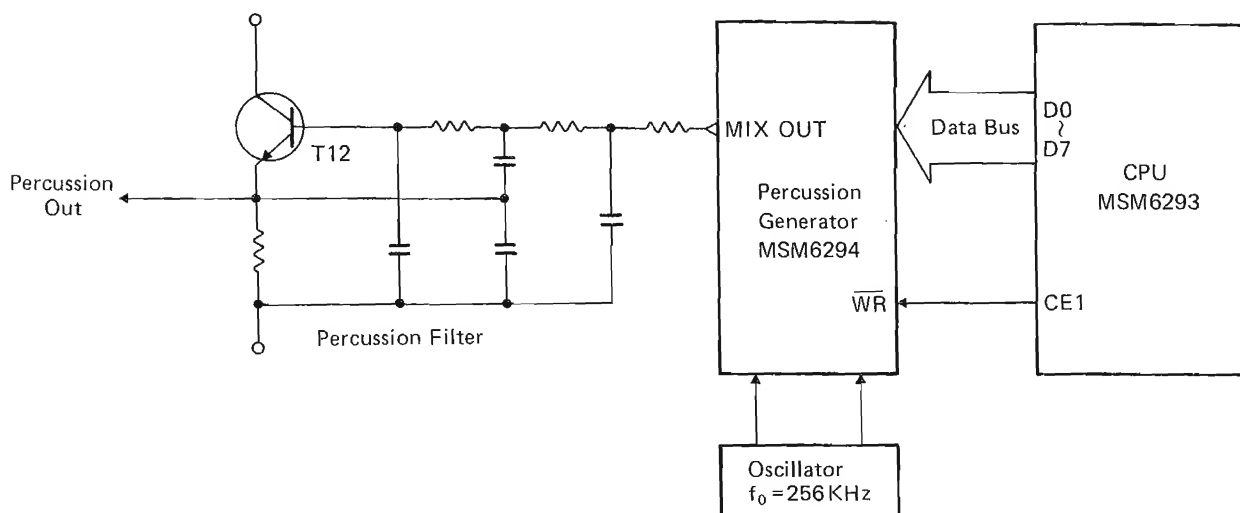
Pin Function of Percussion Generator

Pin No.	Signal	In/Out	Function
1	$\overline{RESET}$	In	Reset signal input. LOW active. The terminal holds LOW level at power switch on for initializing the internal circuit
2	CLK	In	Clock pulse (256 kHz) input
3			No function
4	$\overline{WR}$	In	Write signal input. LOW active. The LSI reads the percussion data from the CPU when the terminal is LOW level.
5	CS	In	Chip select signal input. Fixed at LOW level.
6~13	D0 ~ D7	In	Data bus (D0 ~ D7)
14	DVSS		Ground (0V) source for internal digital circuit
15, 16			No function
17	AVSS		Ground (0V) source for internal DAC
18	MIX-O	Out	Analog percussion signal output
19	AVDD		+5V source for internal DAC
20~27			No function
28	DVDD		+5V source for internal digital circuit

8. MELODY CIRCUIT
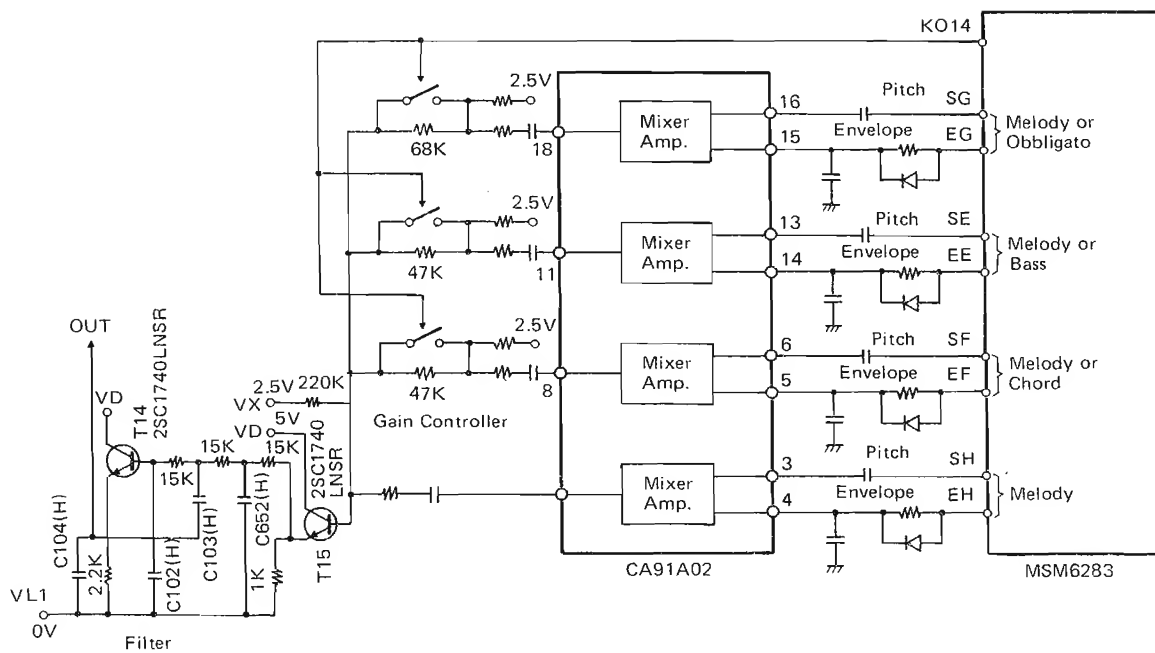
CPU outputs four each of pitch and envelope signals.

Normally all the signals are for melody sounds however, when the demonstration music is played, each pitch and envelope signals become obbligato, bass, chord, or melody sounds.

CA91A 02 contains four mixing amplifiers and merges each pitch and envelope signals.

Gain Controller balances the sound volume of melody and accompaniments for demonstration music. Signal KO14 normally stays HIGH level so that all the switches turn on. When the demonstration music is played, KO14 falls to LOW level turning the switches off and all the accompaniment signals are reduced as they pass through the resistors.

9. SAMPLING CIRCUIT
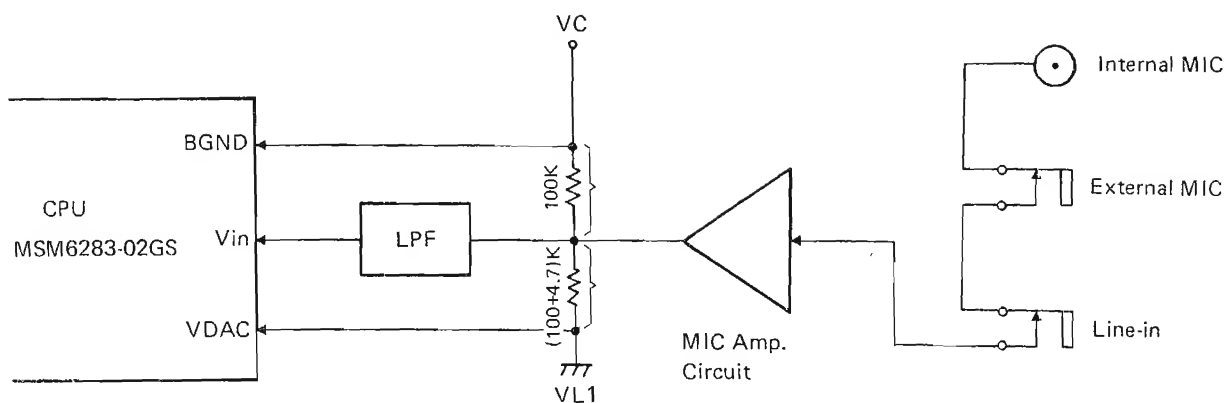
Fig. 1 Sample Sound Input Circuit
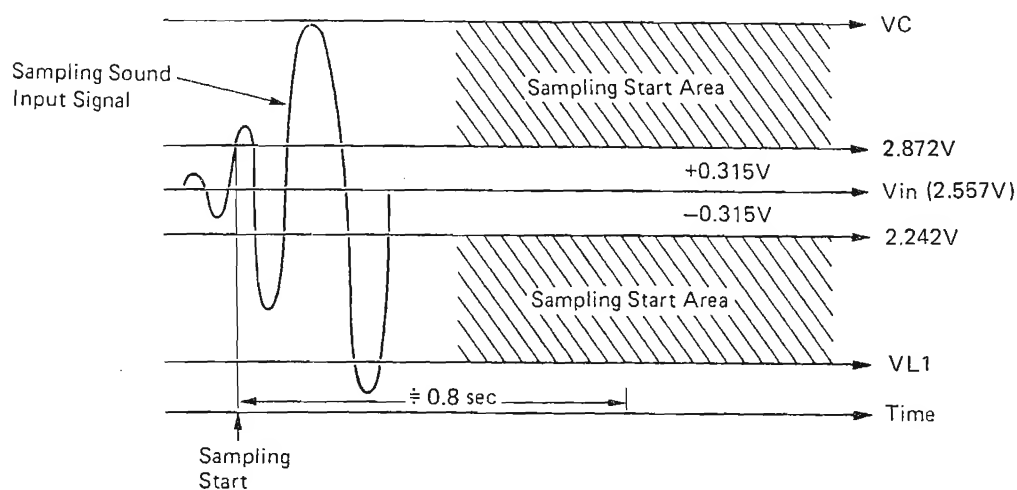
Fig. 2 Vin Input Trigger Level

As shown in Fig. 1, the circuit provides sampling signals to the Vin terminal of the CPU. Resistors 100Kohm and (100 + 4.7) Kohm bias the sampling signal on 2.863V.

When the sampling sound level exceeds ± 0.315V as shown in Fig. 2, the CPU starts to transmit the sampling sound data to the RAMs during the following period.
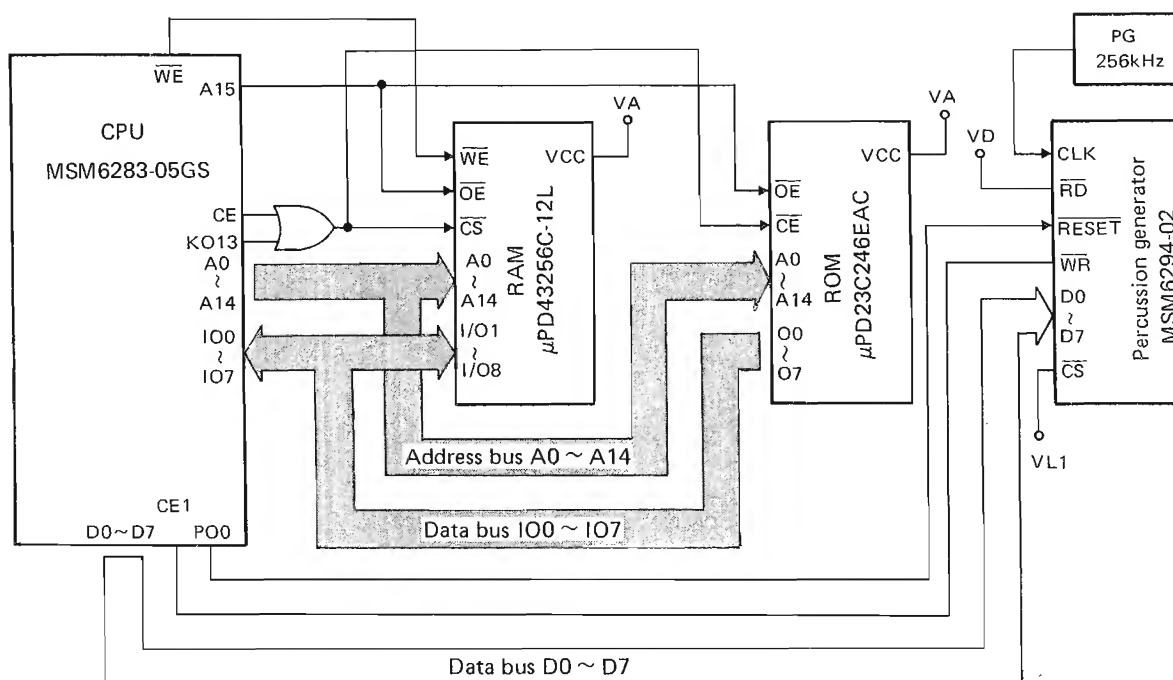
While sampling, the CPU transmits the sampling sound data to the sampling RAMs directly.

While sampling, CPU does not output key common signals (KO0 ~ KO9) so that the keyboard becomes inoperative.

Sampled sounds are digitized in CPU and transmitted to the RAM.

10. PERIPHERAL DEVICE ACCESS

μPD43256C-12L is a 256Kbit RAM for storing sampling sounds and Demo Music ROM data. The data in RAM are kept even power switch OFF as long as DC7.5V is provided.

μPD23C256EAC is a 256Kbit ROM and contains preset tone, percussion data, and system execution program.
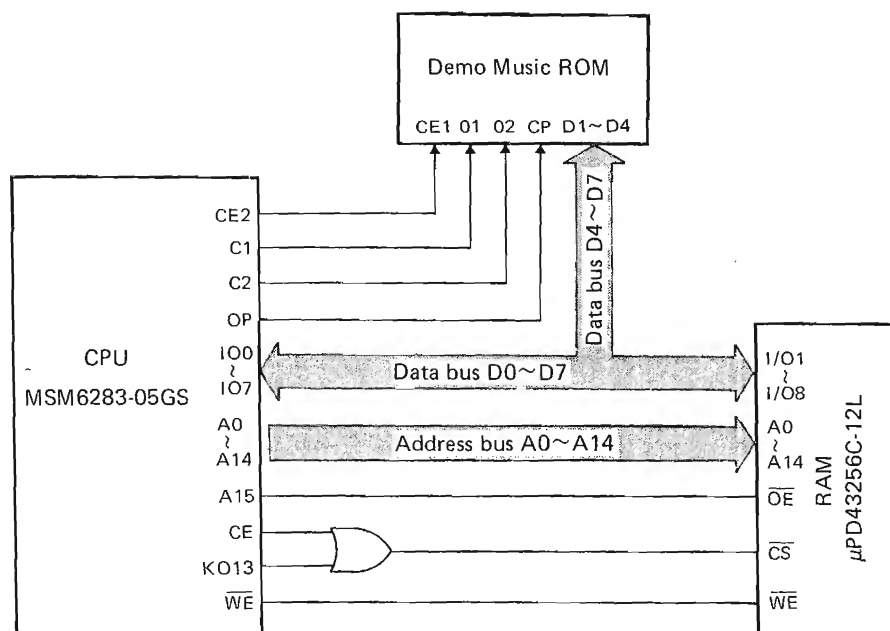
MSM6294-02 is a percussion generator and issues percussion sounds in accordance with the data from CPU.

The chip select condition is as follows.

Ship selection	A15	CE	CE1
RAM	L	L	X
ROM	H	L	X
Percussion generator	X	X	L

H: High level
L: Low level
X: Irrelevant
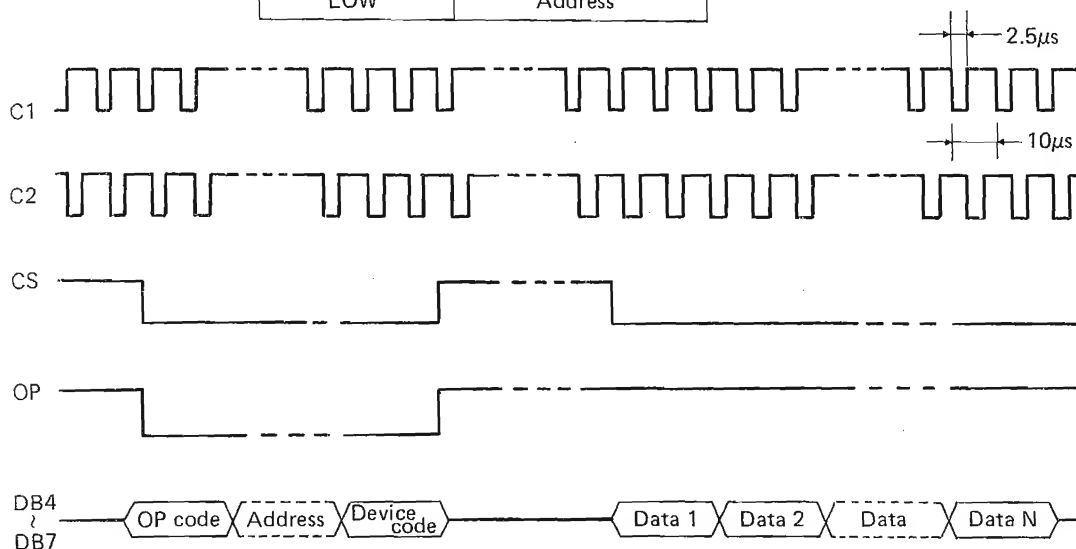
11. DEMO. MUSIC ROM ACCESS

Assigning Demo Music ROM by being LOW of signal CE2, CPU reads data from the ROM directly and generates programmed melody and accompaniment signals.

Since the data bus D4 ~ D7 carries data and address, signal OP determines either the bus carries data or address.
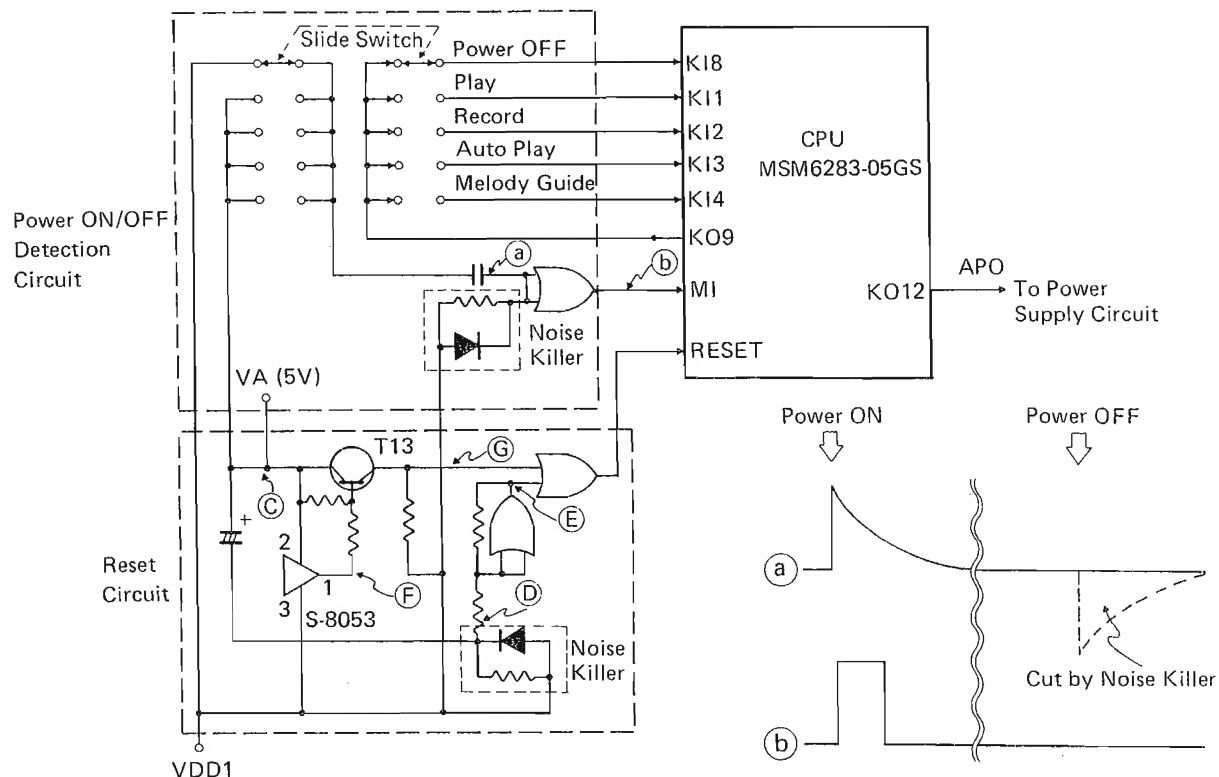
Signal C1 and C2 are clock pulse for data transfer.

OP	D4 ~ D7
HIGH	Data
LOW	Address

Time Chart of Data Transfer

12. RESET & POWER ON/OFF DETECTION CIRCUIT

When the power switch is turned on, terminal MI receives a differential pulse which triggers CPU operation. By receiving signal KO9 from KI1 ~ KI4, or KI8 terminal, CPU descriminates the Mode switch position.

Since VA stays at +5V even power switch is turned off or at the APO (Auto Power Off), the reset signal appears only when new batteries are set or an AC adaptor is inserted.
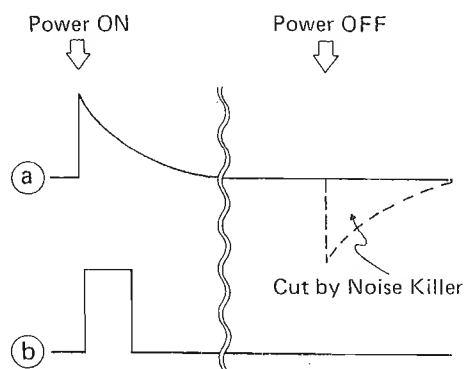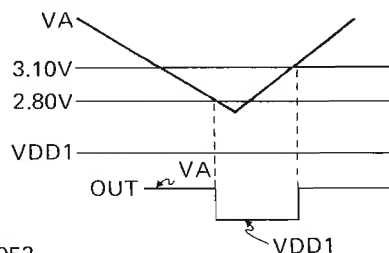The noise killer circuit eliminates negative portion of signal MI at Power OFF.

S-8053 is a voltage detector which observes VA (+5V). When voltage VA becomes less than 2.8V, output pin 1 provides LOW level to turn T13 on. Receiving HIGH level from RESET terminal, CPU stops its functioning.
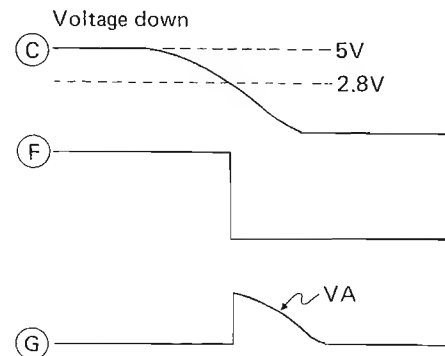
1: OUT
2: VDD
3: VSS

Bottom View

S-8053

— 16 —
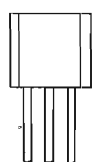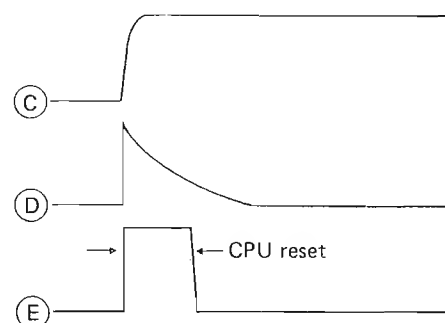
13. POWER SUPPLY CIRCUIT
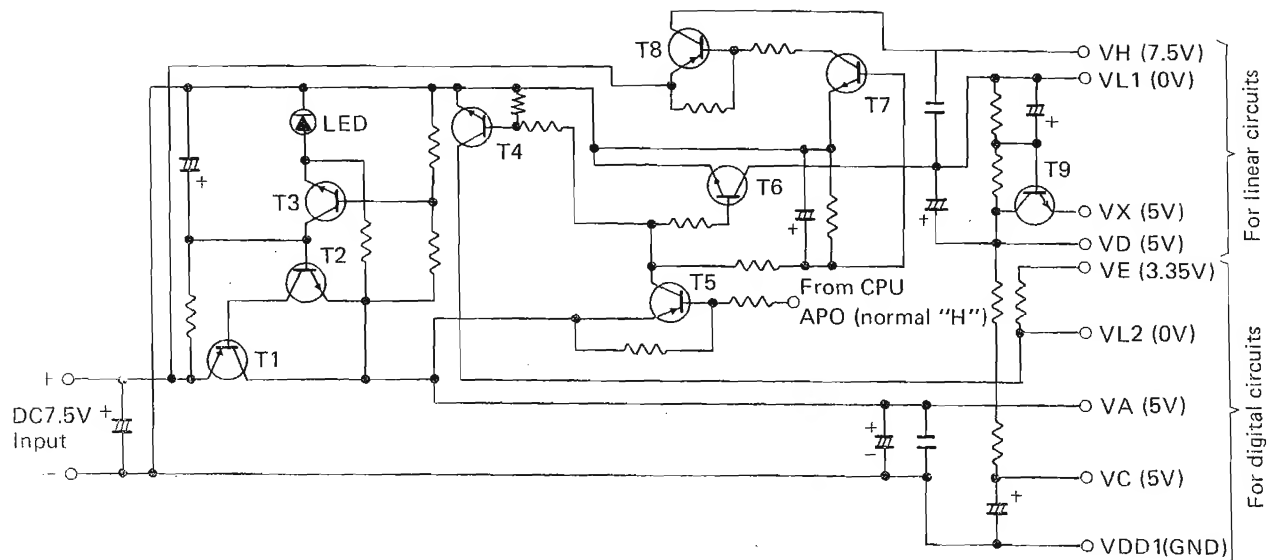
The Power Supply Circuit consists of a voltage regulator and an APO (Auto Power Off) circuit.

When power is ON and operation is normal, the APO signal from the CPU maintains HIGH level.

Transistors T4 ~ T9 turn on providing the voltages to the circuits.

The signal APO becomes LOW, when the keyboard is not operated for seven minutes, and transistors T4 ~ T9 turn off causing the voltages except VA to shut off.

Voltages VA (5V) and VDD1 (ground) are always provided to the CPU even at APO.

Transistors T1, T2 and T3 form voltage regulator.

Using the LED characteristic of current regulation, transistor T3 stabilizes the battery voltage at 5V and the darlington-connected transistor T1 and T2 prevent over current in the circuits.

14. TROUBLESHOOTING

TROUBLE	FAULTY BLOCK	CHECKPOINT
No Power	Power Circuit	Checkpoints' voltages in accordance with the schematic diagram
	Power Switch	Switch contacts and switch spring tension
	Reset Circuit	Waveform ①
	Power ON Detector	Waveform ②
	CPU (MSM6293)	
	Pulse Generator	Waveform ③
	ROM (μPD23C256EAC)	
No sound at all	Power Circuit	Voltages VA, VX
	Reset Circuit	Waveform ①
	Pulse Generator	Waveform ③
	CPU (MSM6293)	
	ROM (μPD23C256EAC)	
	Mixing Amp.	Emitter of transistor T11
	Power Amp. (LA4138)	Pin 2
	Speaker	Speaker terminal (red wire)
No melody, chord, bass, and obbligato (percussion sounds)	CA91A02	
	Filter	Emitters of T14 and T15
	CPU (MSM6293)	
	ROM (μPD23C256EAC)	
No chord, bass, and obbligato	CA91A02	
	Gain Controller	Pin 11 of TC4066
	CPU (μPD23C256EAC)	
	ROM (μPD23C256EAC)	
No percussions	Percussion Generator (MSM6294)	Pin 19
	Clock Pulse Generator	Waveform ④
	Percussion Filter	Emitter of T12
	CPU (MSM6293)	
	ROM (μPD23C256EAC)	
Demo music cannot be played	Demo Music ROM (MSM5268)	
	RAM (μPD43256C)	
	CPU (MSM6293)	
	ROM (μPD23C256EAC)	
Certain keys or switches do not respond	Dirty contacts	
	Broken or poor-soldered PC Joiner	
Sampling impossible	Microphone	
	Sampling Circuit	Collectors of T28 and T29
	CPU (MSM6293)	
	RAM (μPD43256C)	

PARTS LIST

SK-5

Notes: 1. Prices and specifications are subject to change without prior notice.

2. As for spare parts order and supply, refer to the "GUIDEBOOK for Spare Parts Supply", published separately.

3. The numbers in item column correspond to the same numbers in drawing.

Item	Code No.	Part Name	Specification	Q'ty	*	Unit Price N.R. Yen (¥) (FOB: JAPAN)	Rank
		1) M3126-MA1M PCB ASS'Y					
☆	2010 1946	LSI (RAM)	µPD43256C-12L	1			A
☆	2010 2247	LSI (CPU)	MSM6283-05	1			A
☆	2010 2604	LSI (Percussion LSI)	MSM6294-05	1			A
☆	2010 2611	LSI (ROM)	µPD23C256EAC-038	1			A
☆	2105 0532	C-MOS IC	LC4969	1	10		A
☆	2105 0630	C-MOS IC	M74HC32P	1	10		A
☆	2105 0637	C-MOS IC	M4066BP	1	5		A
☆	2114 0252	Monolithic IC	CA91A02	1			A
	2120 8329	Linear IC (Power Amp.)	LA4138	1			A
☆	2251 0126	Transistor	2SB1268R	1	5		A
☆	2320 9616	LED	LN2G	1	10		B
	2765 0315	Semi-fixed resistor	V6EK-PVB5K	1	20		B
☆36	2765 0364	Slide volume	EWA-MFOX25B14	1	5		B
☆	2801 7301	Electrolytic capacitor	6.3RE2-100-F	1	20		C
☆	2804 4801	Electrolytic capacitor	16RE2200	1	5		C
☆	2845 0203	Module capacitor	CNB4X221K	1	10		C
37	2898 0021	Trimmer capacitor	VCT84K911A	1	5		B
38	3501 0035	DC jack	HEC2305-01-050	1	10		B
39	3612 0665	Jack	YKB21-5006	1			B
40	3612 0711	Miniature jack	YKB21-5101	2	5		B
41	3841 0007	Coil	L10P-7L	1	10		C
	3850 1216	MOS IC	S8053ALR	1			A
	6912 1190	Felt seal	M4768-5	1	20		X
	2200 3721	Transistor	2SA933-SQ	2	10		A
	2220 1425	Transistor	2SC1740LNSR-TP-T	11	10		A
	2250 0007	Transistor	2SA934R	1	10		A
	2220 2632	Transistor	2SC2060R	1	10		A
	2300 2086	Diode	1SS254T	20	20		C
	2606 0049	Carbon film resistor	R-20-100K-G-T24-T (1/5W, 100Kohm, ±2%)	2	20		C
	2606 0483	Carbon film resistor	R-20-4.7K-G-T24-T (1/5W, 4.7Kohm, ±2%)	1	20		C
	2606 0532	Carbon film resistor	R-20-10K-G-T24-T (1/5W, 10Kohm, ±2%)	1	20		C
	2617 0028	Carbon film resistor	R-20-100-J-T24-T (1/5W, 100ohm, ±5%)	1	20		C
	2617 0044	Carbon film resistor	R-20-560-J-T24-T (1/5W, 560ohm, ±5%)	1	20		C

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	2617 0052	Carbon film resistor	R-20-1K-J-T24-T (1/5W, 1Kohm, ±5%)	7	20		C
	2617 0061	Carbon film resistor	R-20-2.2K-J-T24-T (1/5W, 2.2Kohm, ±5%)	7	20		C
	2617 0095	Carbon film resistor	R-20-10K-J-T24-T (1/5W, 10Kohm, ±5%)	17	20		C
	2617 0109	Carbon film resistor	R-20-33K-J-T24-T (1/5W, 33Kohm, ±5%)	2	20		C
	2617 0117	Carbon film resistor	R-20-47K-J-T24-T (1/5W, 47Kohm, ±5%)	8	20		C
	2617 0125	Carbon film resistor	R-20-68K-J-T24-T (1/5W, 68Kohm, ±5%)	6	20		C
	2617 0133	Carbon film resistor	R-20-82K-J-T24-T (1/5W, 82Kohm, ±5%)	2	20		C
	2617 0141	Carbon film resistor	R-20-100K-J-T24-T (1/5W, 100Kohm, ±5%)	14	20		C
	2617 0168	Carbon film resistor	R-20-220K-J-T24-T (1/5W, 220Kohm, ±5%)	4	20		C
	2617 0203	Carbon film resistor	R-20-470K-J-T24-T (1/5W, 470Kohm, ±5%)	1	20		C
	2617 0206	Carbon film resistor	R-20-39K-J-T24-T (1/5W, 39Kohm, ±5%)	1	20		C
	2617 0238	Carbon film resistor	R-20-680-J-T24-T (1/5W, 680ohm, ±5%)	1	20		C
☆	2617 0246	Carbon film resistor	R-20-12K-J-T24-T (1/5W, 12Kohm, ±5%)	1	20		C
	2617 0262	Carbon film resistor	R-20-120K-J-T24-T (1/5W, 120Kohm, ±5%)	3	20		C
	2617 0289	Carbon film resistor	R-20-15K-J-T24-T (1/5W, 15Kohm, ±5%)	6	20		C
	2617 0297	Carbon film resistor	R-20-22K-J-T24-T (1/5W, 22Kohm, ±5%)	2	20		C
	2617 0301	Carbon film resistor	R-20-56K-J-T24-T (1/5W, 56Kohm, ±5%)	6	30		C
	2617 0343	Carbon film resistor	R-20-390K-J-T24-T (1/5W, 390Kohm, ±5%)	1	20		C
	2617 0378	Carbon film resistor	R-20-3.9K-J-T24-T (1/5W, 3.9Kohm, ±5%)	1	20		C
	2617 0394	Carbon film resistor	R-20-680K-J-T24-T (1/5W, 680Kohm, ±5%)	1	20		C
	2617 0459	Carbon film resistor	R-20-27K-J-T24-T (1/5W, 27Kohm, ±5%)	1	20		C
	2617 0467	Carbon film resistor	R-20-68-J-T24-T (1/5W, 68ohm, ±5%)	4	20		C

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	2617 0491	Carbon film resistor	R-20-330K-J-T24-T (1/5W, 330Kohm, ±5%)	1	20		C
	2617 0505	Carbon film resistor	R-20-33-J-T24-T (1/5W, 33ohm, ±5%)	1	20		C
	2617 0877	Carbon film resistor	R-20-8.2K-J-T24-T (1/5W, 8.2Kohm, ±5%)	1	20		C
☆	2801 7189	Electrolytic capacitor	50RE-2-R33-T14-T	4	20		C
	2804 5956	Electrolytic capacitor	50RE2-2R2-T2-T	2			C
	2805 3061	Electrolytic capacitor	6.3RE2-220-T2-T	2			C
	2805 3100	Electrolytic capacitor	16RE2-10-T14-T	1	10		C
	2805 3142	Electrolytic capacitor	16RE2-10-T2-T	2	20		C
	2807 1082	Electrolytic capacitor	16RE2-100-T2-T	2	10		C
	2807 1104	Electrolytic capacitor	6.3RE2-100-T14-T	1	20		C
	2807 1112	Electrolytic capacitor	10RE2-100-T2-T	2	20		C
	2807 1121	Electrolytic capacitor	10RE2-220-T2-T	2	20		C
	2807 1155	Electrolytic capacitor	50RE2-1-T14-T	3	20		C
	2807 1180	Electrolytic capacitor	10RE2-47-T2-T	3	20		C
	2813 0245	Semi conductive capacitor	RT-C50TKYR103K-T	9	20		C
☆	2813 0294	Semi conductive capacitor	RT-C60TKYR223K-T	2	20		C
	2813 0525	Semi conductive capacitor	RT-C50TKYR682K-T	1	20		C
	2813 0560	Semi conductive capacitor	DD408SR104K16-T	11	20		C
☆	2813 0644	Semi conductive capacitor	RT-C40TKYR102K-T	5	20		C
☆	2813 0651	Semi conductive capacitor	RT-C40TKYR332K-T	1	20		C
☆	2813 0658	Semi conductive capacitor	RT-C50TKYR822K-T	1	20		C
	2818 2164	Ceramic capacitor	RT-HE90TKCH151J-T	1	10		C
	2818 3241	Ceramic capacitor	RT-HE80TKCH101J-T	2	10		C
☆	2818 3330	Ceramic capacitor	RT-HE60TKCH560J-T	1	20		C
	2819 0379	Ceramic capacitor	RT-HE40TKYB151K-T	1	10		C
	2819 0450	Ceramic capacitor	RT-HE70TKSL221K-T	1	10		C
	2819 0565	Ceramic capacitor	RT-HE90TKSL471K-T	1	10		C
☆	2819 5362	Ceramic capacitor	DD406SR473K16-T	6	20		C
	2830 6211	Mylar capacitor	AMZV-154K50-T	1	10		C
☆	4307 7420	Blank PCB-M3126-MA1M	M11300-1	1			X

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		2) M3126-CN1M PCB ASS'Y					
	2301 0097	Diode	1S2473	10	20		C
42	2320 9764	LED	LN251RPP.WE	1	10		B
☆	4307 7410	Blank PCB-M3126-CN1M	M11290-1	1			X
		3) M3126-CN2 PCB ASS'Y					
	2010 2597	LSI	MSM-5268-56GS-K	1			A
	2818 7114	Ceramic capacitor	HE70TJYF103Z	1	10		C
☆	4307 7430	Blank PCB-M3126-CN2	M32686-1	1			X
		4) M3129-KY1M PCB ASS'Y					
	2300 2086	Diode	1SS254T	32	20		C
☆	4307 5041	Blank PCB-M3129-KY1M	M21332A-1	1			X
		5) UPPER CASE SUB ASS'Y					
☆ 1	3831 0070	Speaker	EAS-8P109T	1			B
☆ 2	6909 7520	Slide VR knob 123	M32610-2	1	20		C
3	6905 8220	Slide knob 155	M31954-1	2	20		C
4	6907 0110	Contact rubber 129B-1	M42607-1	1	10		B
5	6907 0120	Contact rubber 129B-2	M42607-2	1			B
☆ 6	6909 5252	DS contact rubber 121	M32611B-1	2			B
7	6909 5880	Slide board switch S	CSB-12S	1	10		C
8	6909 5890	Slide board switch D	CSB-12D	1	10		C
9	6909 6091	Button 126 set	M32694A*1	1			C
☆10	6909 6180	CN spacer	M43268-1	1	20		X
☆11	6909 6190	Contact rubber 126A	M43264-1	1	5		B
☆12	6909 6200	Contact rubber 126B	M43265-1	1	10		B
☆13	6909 6210	Contact rubber 126C	M43266-1	1	10		B
☆14	6907 0270	Key stopper B32	M42611-1	1	10		C

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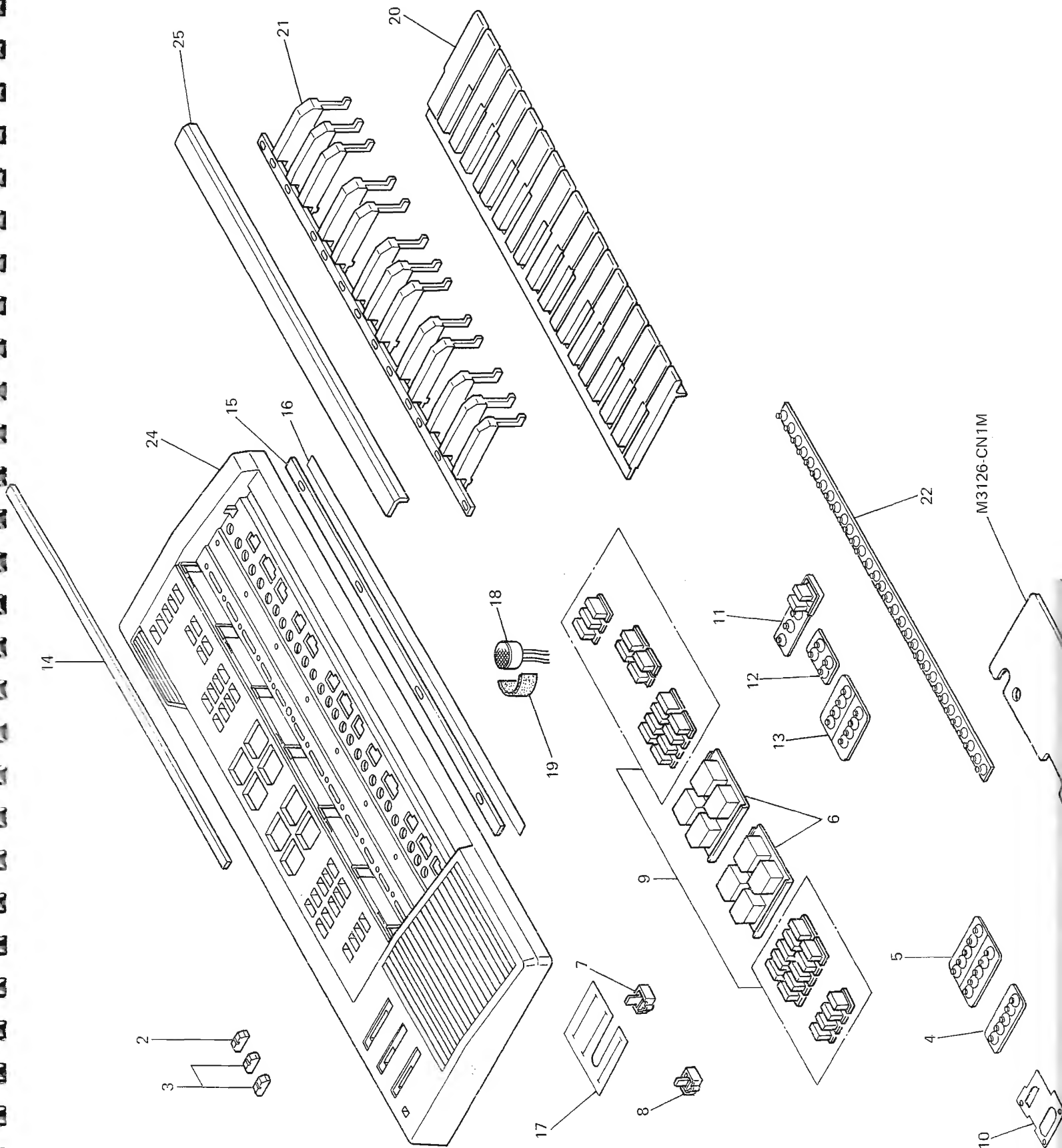Rank A: Essential
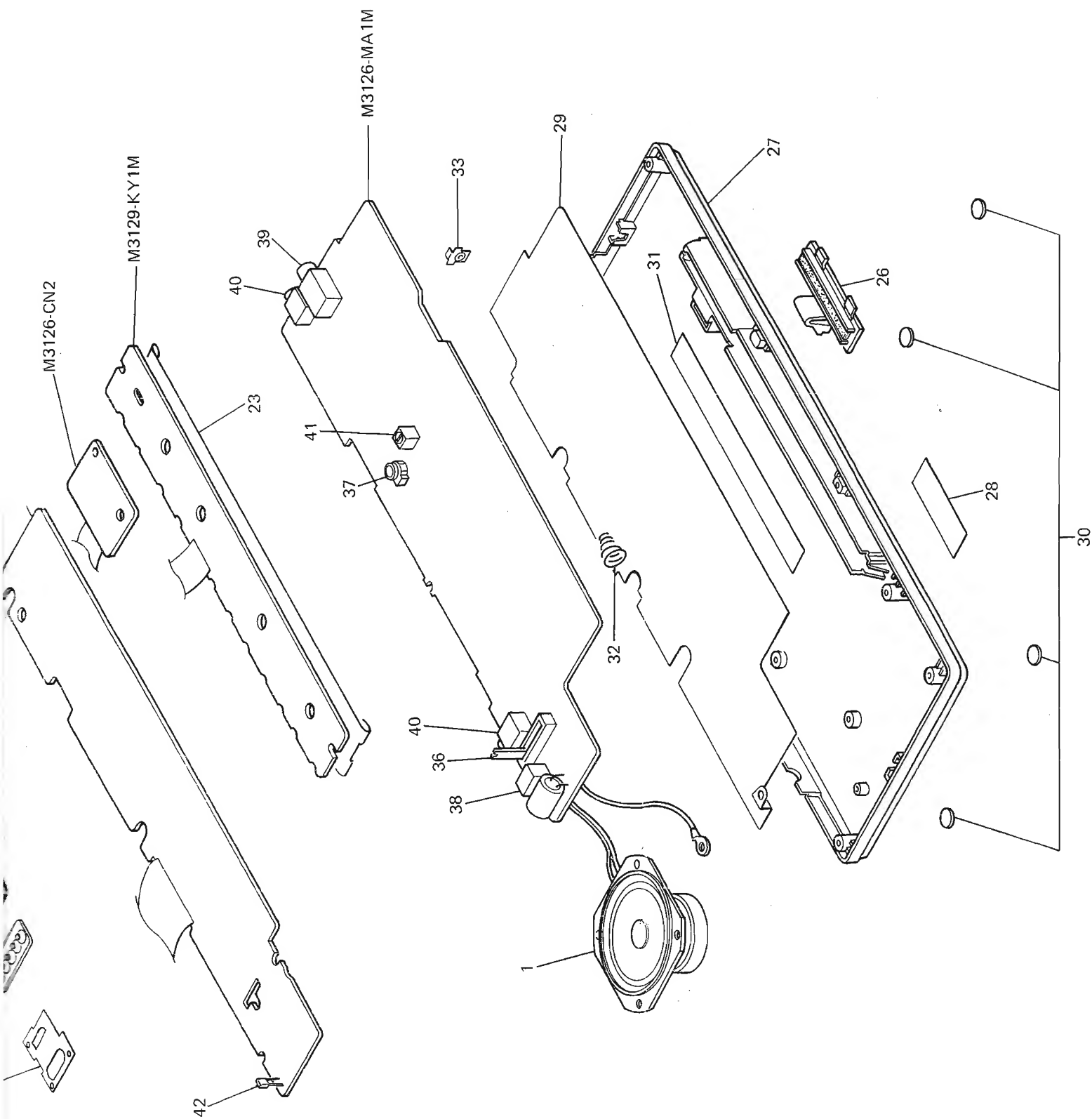 B: Stock recommended
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☆15	6908 6071	Key stopper A32	M32043A-2	1	20		X
16	6909 5370	Felt seal	M43277-1	1	20		C
17	6909 6006	Blind 126	M43267-1	1	20		X
		6) MIC ASS'Y					
18	3830 9021	Condenser MIC	WM-034CY	1			A
19	6907 0321	Sponge 129	M42612A-1	1	20		X
		7) KEYBOARD ASS'Y					
20	6907 0150	White key set	M1843-1	1			C
21	6907 0160	Black key set	M1844-1	1			C
22	6907 0300	Contact rubber	M31953-1	1			B
23	6907 4551	Shield plate 129A	M21391A-1	1	10		X
☆24	6909 6030	Upper case sub ass'y	M21723*1	1			C
☆25	6909 6041	Keyboard pannel	M21282A-3	1			C
		8) LOWER CASE ASS'Y					
☆26	6905 8343	Battery cover sub ass'y	M31417C*8	1	10		C
☆27	6909 6011	Lower case sub ass'y	M21708A*3	1			C
☆28	6909 6020	Rating plate 126	M42444-12	1	20		C
☆29	6909 6720	Shield plate 121A	M21733-1	1	5		X
30	6902 6690	Rubber foot A	M41361-1	4	10		C
☆31	6912 2870	Felt seal	M42538-1	1	20		X
32	6912 2630	Battery spring 120	M42382-1	1	20		C
33	6345 2238	Battery spring G55	A42606A-1	1	10		C

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M3126-CN1M

M3126-CN2

M3129-KY1M

M3126-MA1M

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